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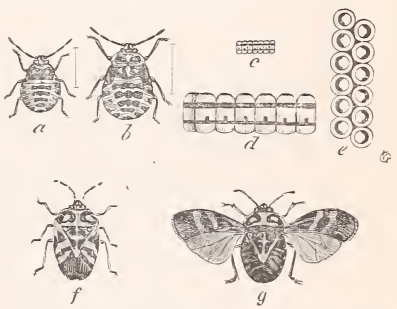
DIVISION OF ENTOMOLOGY.

THE HARLEQUIN CABBAGE BUG, OR CALICO BACK.

(*Murgantia histrionica* Hahn.)

GENERAL APPEARANCE AND METHOD OF WORK.

The harlequin cabbage bug, or calico back, is an oval, somewhat flattened black bug, with bright red and yellow markings arranged as shown in the figure, which lives all the year round in the more southern United States upon cabbage, mustard, radish, and other cruciferous plants, puncturing the leaves with its beak and causing them to wither and dry. The smaller bugs are much like the larger ones, but lack wing covers, while the eggs, of the shape and appearance indicated in the figure, are laid upon the undersides of the leaves.



Murgantia histrionica: *a*, young; *b*, half grown; *c*, egg cluster; *d*, same from side; *e*, same from above; *f*, adult, wings closed; *g*, same, wings open; *e*, *f*, *g*, natural size; *a*, *b*, slightly enlarged; *d*, *e*, considerably enlarged. (From Riley.)

DISTRIBUTION.

This insect was originally an inhabitant of Mexico and Central America. It appeared in Texas in 1866, and gradually spread from year to year to the north and east. It made its first appearance in Missouri in 1870, and during the next ten years spread very rapidly. In 1876 it was reported to have been found as far north as Delaware, while from 1880 to 1884 it was very injurious in restricted localities in Maryland, and it has been reported from south New Jersey by Dr. John B. Smith. While its spread has taken place as reported, it is by no means found in all localities in the States affected, and many new occurrences have been reported to us within very recent years from the Carolinas, Virginia, and Maryland. The insect is not likely to spread north of the regions known as the upper austral.

HABITS AND NATURAL HISTORY.

The eggs are about one-twentieth of an inch long by one-thirtieth of an inch wide, and are usually deposited in two parallel rows of about half a dozen each. They are at first green in color, but soon become white with black markings, resembling small white barrels with black hoops.

The newly hatched insect is pale green marked with black, but with successive molts takes on certain orange markings. The eggs hatch on the third or fourth day after laying, and the young bugs go through all their molts and are ready for reproduction in about two weeks. There are many generations in the course of the summer; in the South probably as many as seven or eight, while in Maryland

there may not be more than three or four. On the advent of winter the adult insects crawl away under any kind of rubbish to hibernate, reappearing in the spring with the first warm weather and flying to the first cruciferous plants which come up from the ground. The earliest specimens congregate upon mustard and early radishes, flying later to cabbages. The eggs are laid as soon as the first food plants have grown up to any extent and put out their leaves. In Mississippi this takes place in the latter part of March, and each female will continue egg-laying for about ten days. In the District of Columbia the eggs are ordinarily not laid until nearly a month later, although the date depends entirely upon the character of the season. The insects hibernate, as a general thing, near old cabbage fields, and the first eggs are laid upon mustard or other wild cruciferous plants which may be growing in the neighborhood of the fields. Where early cabbages are set out, the first eggs are sometimes not laid until the cabbages are in place.

REMEDIES.

The insect is a very difficult one to kill, and none of the early recommendations which looked to the destruction of the species while at work upon cabbage were satisfactory. Even kerosene emulsion, which ordinarily is so fatal to sucking insects, must be applied so strong, in order to kill this bug, that it will ruin the cabbages. Destruction of the over-wintering individuals is the important point to be striven for. They cluster largely upon mustard and radishes in the early spring, and as there is ordinarily nothing to be gained by saving mustard, in particular, pure kerosene, or kerosene emulsion diluted with only one part of water, should be applied. The planting of a little trap crop of mustard is an admirable idea which has been suggested by Mr. H. E. Weed, of the Mississippi Agricultural Experiment Station, and this remedy has been tried with excellent effect in Mississippi. On one occasion he planted a row of radishes through the middle of a crop of cabbages which was put into the field early in March. The radishes were well grown by the time the second brood of bugs were hatched, and nearly all the insects found their way to the radishes and were there killed by spraying with kerosene applied by a hand force pump or common watering pump. In small fields where the first noticed bugs occur upon kale or broccoli, it will pay to send a boy through with a hand-net and have him sweep the bugs from the crop into the net, when they can be destroyed. Many can be captured in this way, and the numbers of the later broods greatly reduced.

NATURAL ENEMIES.

The harlequin cabbage bug is singularly free from the attacks of natural enemies. Birds and poultry seem to leave it alone. Prof. H. A. Morgan, of Louisiana, however, has discovered that the eggs are pierced by a minute parasite, sometimes so extensively that in September, 1892, out of over one thousand eggs, nearly all were killed. The parasite is *Trissolcus murgantiæ* Ashm., a species which has hitherto been known only in Louisiana, but which it may pay to bring to Maryland, if the harlequin cabbage bug is allowed to increase.

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Approved:
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